

Hollis Croft, Sheffield

Bespoke Spider boom platform facilitates concrete placement on tower construction

Key Benefits:

Improved on-site productivity

Reduced crane operation



Customer:

4D Structures

Main Contractor:

Watkin Jones Group

Project type:

Private, Residential

Products and Services:

TRIO panel formwork, Rail Climbing System (RCS), VARIOKIT, SKYDECK, CB 240 brackets

The project at a glance

The 19-storey tower forms part of the larger Hollis Croft student housing development, approximating a total cost of £63 million. Alongside student accommodation, the development will also comprise commercial space, enhancing Sheffield's thriving student community.

What did the customer need?

The construction of all buildings took place simultaneously; quick and cost-efficient operations were sought to ensure the 19-storey tower kept up with the pace of the project. A solution was required that would enable 4D Structures to reduce crane dependency, yet accelerate the speed of construction. They wanted to place a 13m Spider boom on a platform to facilitate the concrete pour at each jump. The proposed idea meant that the platform would be supported by RCS, with TRIO formwork bearing the entire load of the platform as each level was concreted.

What was the challenge?

With loadings of 40kN per leg, we had to consider the implications of placing the Spider boom on top of the TRIO panels, as this had never been done before. The load from the boom and platform had to be transferred elsewhere in order to reduce the impact on the formwork and for construction to be practical.

How did we help?

Although not considered possible by design at first, we worked alongside 4D Structures to find a way of transferring the load back into the cured concrete walls of the core.

We incorporated custom box steel infills between the inner TRIO panels, which were fabricated in-house using standard off-the-shelf steel sections. By improvising with SRU walers and RCS rails from our VARIOKIT range, we reduced the need for bespoke components and minimised costs.

In order to enhance load-bearing capacity and guide the box steel infills, we implemented ACS Double Anchor shoes in addition to RCS climbing shoes which were cast into the concrete walls of the core.

The weight of the boom and platform was distributed across each infill, transferring the load into the ACS Double Anchor shoes. A metal plate was supplied at the bottom of the infills to enable them to rest on ACS anchor plates, which bore the combined load of the boom and platform.



The platform

The platform was fabricated on site and comprised a timber face, GT24 girders, two large SRU walers and Spider boom steels to help secure the lower body of the pump to the platform. Each box steel infill was also supplied with a metal plate at the top, on which the Spider boom platform was positioned and secured with wingnut and Dywidag ties. The platform was then craned into position. Once in place, the main body of the boom was lifted via crane and fixed to the lower body, ready for use.

The cost-saving solution enabled subsequent concrete pours to take place in the event of strong winds, which would not have been possible with crane operation alone.

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